

## **【SPECIFICATION】**

### **【Title of the Invention】**

A new carbonated candy-type pharmaceutical preparation

### **【Brief Description of Drawings】**

Fig. 1 is a flow chart showing the manufacturing process for carbonated candy-type pharmaceutical preparation of the present invention,

Fig 2 is an another flow chart showing the manufacturing process for a large carbonated candy-type pharmaceutical preparation of the present invention.

### **【Detailed Description of the Invention】**

#### **【Purpose of the Invention】**

#### **【Background of the Invention】**

The present invention concerned with a new type of pharmaceutical preparation.

Especially, the present invention concerned with a new carbonated candy-type vitamin preparation for children.

A multi-vitamins preparation comprises various vitamins, amino acids, trace inorganic compounds, collagen, green tea extract, ginseng radix extract and other ingredients necessary for human beings. Such preparation is manufactured and sold in the form of a known pharmaceutical preparation such as tablet, capsule, film-coated tablet or soft capsule etc. Though vitamins are necessary for children and weak people, such a preparation as the said form is however difficult for children to take it. Carbonated candy is a hard candy form composed mainly with sugar and containing carbon dioxide as disclosed in U.S. Pat. No. 3,012,893 which is herein incorporated by reference. The carbonated candy when placed in the mouth produces an entertaining but short lived popping sensation and is popular eating between meals for children.

**【Technical subject to be accomplished by the Invention】**

The invention concerned with a new carbonated candy-type vitamin preparation for children and weak people. The inventor has studied for a long time to solve problems of the known vitamin preparation and finally found out the fact that, when vitamin preparation is prepared in the form of carbonated candy-type incorporated with carbon dioxide, children eagerly take the preparation and when the preparation is taken in the mouth, the preparation is popped out and the active ingredients are diffused and dissolved in the mouth very quickly and therefore, the effects of the active ingredients showed very quickly.

**【Constitution of the Invention】**

The present invention concerned with a carbonated candy-type vitamin preparation comprising at least one vitamin selected from the group consisting vitamins, trace inorganic compounds, ingredients necessary for human beings, organic acids, amino acids; sucrose; starch syrup(maltose syrup); lactose; carbon dioxide; sodium hydrogen carbonate; and prepared by a conventional manufacturing process for carbonated candy.

As for vitamins which can be used in the present invention, fat-soluble vitamins such as vitamin A<sub>1</sub>(retinol), vitamin A<sub>2</sub>(3-dehydroretinol), vitamin A<sub>3</sub>, vitamin D<sub>2</sub>(ergocalciferol), vitamin D<sub>3</sub>(cholecalciferol), provitamin D<sub>2</sub>(ergosterin), provitamin D<sub>3</sub>(dehydrocholesterol), vitamin E( $\alpha$ -tocopherol,  $\beta$ -tocopherol,  $\gamma$ -tocopherol,  $\delta$ -tocopherol), vitamin F(linoleic acid, linolenic acid), vitamin K<sub>1</sub>, vitamin K<sub>2</sub> or vitamin U, water-soluble vitamins such as vitamin B<sub>1</sub>(thiamine), vitamin B<sub>2</sub>(riboflavin), vitamin B<sub>6</sub>(pyridoxin), nicotinamide, nicotinic acid, pantothenic acid, vitamin H(biotin), folic acid, vitamin B<sub>12</sub>(cyanocobalamin), choline, inositol, vitamin L<sub>1</sub>(anthranilic acid), vitamin L<sub>2</sub>(5'-thiomethyladenosine), vitamin B<sub>13</sub>(orotic acid) or vitamin C(ascorbic acid) can be exemplified. As for amino acid, glycine, alanine, valine, leucine, isoleucine, serine, threonine, cysteine, methionine, asparaginic acid, glutaminic acid, lysine, arginine, phenylalanine, tyrosine, histidine, tryptophane, proline and oxyproline can be exemplified. Other ingredients such as KI, MgO, Cu<sub>2</sub>O, ZnSO<sub>4</sub>, MnSO<sub>4</sub>,

CaHPO<sub>4</sub>, KCl, dried yeast(yeast containing Cr, yeast containing Se, yeast containing Mo), precipitated calcium carbonate, pomegranate extract, collagen, chitosan, green tea extract, Ginseng Radix extract, Acanthopanax Cortex extract, onion extract, malic acid, citric acid, tartaric acid, fumaric acid, maleic acid or acetic acid can be used. Other ingredient such as  
5 fruit essence, fruit extract, food color or emulsifier can be added.

In the present invention, 1-30 weight parts of active ingredient, 3-30weight parts of sucrose, 3-30 weight parts of starch syrup(maltose syrup), suitable amount of ingredient selected from the group consisting emulsifier, fruit juice, fruit essence or food color can be mixed and processed by a conventional carbonated candy manufacturing method to obtain a  
10 carbonated candy-type vitamin preparation.

The preparation method can be explained as follows:

1. Active ingredients, sucrose, starch syrup(maltose syrup) and other ingredients, except  
15 carbon dioxide, sodium bicarbonate and color are dissolved, suspended or emulsified in a suitable amount of water and the mixture is heated rapidly to obtain a molten mass;

2. The molten mass is concentrated to about 1-3 weight parts of water to obtain a concentrated molten mass;

3. The concentrated molten mass is transferred to a pre-heated autoclave where color, essence and sodium bicarbonate are added by rapid stirring and is injected with carbon  
20 dioxide gas by rapid stirring to disperse the carbon dioxide bubbles under high pressure;

4. The molten carbon-dioxide-gasified mass is injected into a suitable size of tube or candy-type mold;

5. The tube or mold injected with molten carbon-dioxide-gasified mass is cooled to or  
25 below 15°C;

6. The cooled carbonated candy-type mass is taken out and/or crushed under or below 20°C, under or below 40% of RH;

7. In the case of crushed carbonated mass, the crushed carbonated mass is sieved through a standard sieve; and

8. The carbonated candy-type mass or sieved crushed carbonated mass is sealed and packaged in a hermetic package.

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The above procedure is showed in Fig. 1. Fig. 2 is an another flow chart showing the manufacturing process for a large carbonated candy-type pharmaceutical preparation of the present invention.

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The present invention is explained in more detail by the examples.

#### Example 1

	vitamin C	250g
15	collagen powder	200g
	pomegranate extract powder	20g
	lysine	200g
	sucrose	700g
	starch syrup(maltose syrup)	400g
20	lactose	400g
	carbon dioxide	34g
	sodium bicarbonate	20g
	grape essence	50g
	food color, Blue No. 1	6.4g
25	food color, Red No. 1	2g

In a tank 400ml of water, vitamin C, collagen powder, pomegranate extract powder, lysine, sucrose, starch syrup(maltose syrup) and lactose are added under stirring and the mixture is heated to have molten mass. The molten mass is deaerated and concentrated to a mass having about 2 weight % of water content at the same temperature. To the concentrated  
5 molten mass, remaining ingredients are added and carbon dioxide is injected at carbon dioxide pressure of 40 ~ 50kg/cm<sup>2</sup> by rapid stirring to disperse the gas bubbles. After stirring, the gasified molten mass is injected into a suitable metal tube. The tube or mold injected with molten mass is cooled to or below 15°C. The cooled carbonated candy-type mass is taken out and crushed under or below 20°C, under or below 40% of RH. The crushed  
10 carbonated mass is sieved through a standard sieve. About 2.0g of the carbonated candy-type mass or sieved crushed carbonated mass sealed and packaged in a hermetic aluminium film package coated with polypropylene film.

#### Example 2

15	vitamin C	500g
	vitamin B <sub>1</sub>	200g
	collagen powder	200g
	pomegranate extract powder	20g
	sucrose	500g
20	starch syrup(maltose syrup)	400g
	lactose	400g
	carbon dioxide	34g
	sodium bicarbonate	20g
	grape essence	50g
25	food color, Blue No. 1	6.4g
	food color, Red No. 1	2g

400ml of water, vitamin C, vitamin B<sub>1</sub>, collagen powder, pomegranate extract powder, sucrose, maltose syrup and lactose are added under stirring in a tank and the mixture is heated to have molten mass. The molten mass is deaerated and concentrated to a mass having about 2 weight % of water content at the same temperature. To the concentrated  
 5 molten mass, remaining ingredients are added and carbon dioxide is injected at carbon dioxide pressure of 40 ~ 50kg/cm<sup>2</sup> by rapid stirring to disperse the gas bubbles. After stirring, the gassified molten mass is injected into a suitable metal tube. The tube or mold injected with molten mass is cooled to or below 15°C. The cooled carbonated candy-type mass is taken out and crushed under or below 20°C, under or below 40% of RH. The crushed  
 10 carbonated mass is sieved through a standard sieve. About 2.0g of the carbonated candy-type mass or sieved crushed carbonated mass sealed and packaged in a hermetic aluminium film package coated with polypropylene film.

### Example 3

15	vitamin C	1000g
	vitamin B <sub>1</sub>	200g
	collagen powder	200g
	pomegranate extract powder	20g
	sucrose	500g
20	starch syrup(maltose syrup)	400g
	lactose	400g
	carbon dioxide	34g
	sodium bicarbonate	20g
	strawberry essence	50g
25	food color, Blue No. 1	6.4g
	food color, Red No. 1	2g

A carbonated candy-type vitamin preparation is prepared by a similar method to Example 1.

#### Example 4

5	vitamin C	1000g
	riboflavin	10g
	pyridoxine.HCl	25g
	vitamin B <sub>1</sub>	200g
	collagen powder	200g
10	green tea extract powder	200g
	Acanthopanax Cortex extract powder	100g
	alanine	50g
	valine	50g
	sucrose	500g
15	starch syrup(maltose syrup)	400g
	lactose	400g
	carbon dioxide	34g
	sodium bicarbonate	20g
	orange essence	50g
20	food color, Blue No. 1	6.4g
	food color, Red No. 1	2g

A carbonated candy-type vitamin preparation is prepared by a similar method to Example 1.

#### 25 Example 5

	vitamin C	250g
	riboflavin	10g

	pyridoxine.HCl	25g
	vitamin B <sub>1</sub>	50g
	tocopherol acetate	50g
	dried yeast containing Se	50g
5	Ginseng Radix extract	100g
	sucrose	750g
	starch syrup(maltose syrup)	400g
	lactose	400g
	carbon dioxide	34g
10	sodium hydrogen carbonate	20g
	orange essence	50g
	food color, Blue No. 1	6.4g
	food color, Red No. 1	2g

A carbonated candy-type vitamin preparation is prepared by a similar method to

#### 15 Example 1.

#### Example 6

	vitamin C	250g
	riboflavin	10g
20	pyridoxine.HCl	25g
	vitamin B <sub>1</sub>	50g
	tocopherol acetate	50g
	dried yeast containing Se	50g
	retinol acetate	20g
25	ergocalciferol	10g
	Acanthopanax Cortex extract powder	100g
	sucrose	750g



	starch syrup(maltose syrup)	400g
	lactose	400g
	carbon dioxide	34g
	sodium bicarbonate	20g
5	orange essence	50g
	food color, Yellow No. 4	5g
	food color, Red No. 3	2.5g

A carbonated candy-type vitamin preparation is prepared by a similar method to Example 1.

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#### Example 7

	vitamin C	500g
	riboflavin	50g
	pyridoxine.HCl	55g
15	vitamin B <sub>1</sub>	250g
	tocopherol acetate	50g
	isoleucine	10g
	serine	10g
	threonine	10g
20	dried yeast containing Se	50g
	retinol acetate	20g
	ergocalciferol	10g
	Acanthopanax Cortex extract	100g
	KI	10g
25	sucrose	750g
	starch syrup(maltose syrup)	400g
	lactose	400g

	carbon dioxide	34g
	sodium bicarbonate	20g
	orange essence	50g
	food color, Yellow No. 4	5g
5	food color, Red No. 3	2.5g

A carbonated candy-type vitamin preparation is prepared by a similar method to Example 1.

#### Example 8

10	vitamin C	500g
	riboflavin	50g
	pyridoxine.HCl	5g
	vitamin B <sub>1</sub>	250g
	tocopherol acetate	50g
15	dried yeast containing Se	50g
	retinol acetate	20g
	ergocalciferol	10g
	Acanthopanax Cortex extract	100g
	KI	10g
20	sucrose	750g
	starch syrup(maltose syrup)	400g
	lactose	400g
	carbon dioxide	34g
	sodium bicarbonate	20g
25	orange essence	50g
	food color, Yellow No. 4	5g
	food color, Red No. 3	2.5g

400ml of water, vitamin C, vitamin B<sub>1</sub>, riboflavin, pyridoxin.HCl, tocopherol acetate, dried yeast containing Se, retinol acetate, ergocalciferol, Acanthopanax Cortex extract, KI, sucrose, starch syrup(maltose syrup) and lactose are added in a tank under stirring and the mixture is heated to have molten mass. The molten mass is deaerated and concentrated to a mass having about 2 weight % of water content at the same temperature. To the concentrated molten mass, remaining ingredients are added and carbon dioxide gas is injected at carbon dioxide pressure of 40 ~ 50kg/cm<sup>2</sup> by rapid stirring to disperse the gas bubbles. After stirring, the gasified molten mass is injected into a candy-type mold of 2g content. The mold injected with molten mass is cooled to or below 15°C. The cooled carbonated candy-type mass is taken out under or below 20°C, under or below 40% of RH. The carbonated candy-type mass sealed and packaged in a hermetic aluminium film package coated with polypropylene film.

#### Example 9

15	vitamin C	250g
	riboflavin	50g
	pyridoxine.HCl	55g
	vitamin B <sub>1</sub>	250g
	tocopherol acetate	50g
20	dried yeast containing Se	50g
	retinol acetate	20g
	ergocalciferol	10g
	KI	10g
	arginine	10g
25	histidine	10g
	onion extract	50g
	chitosan	100g

	citric acid	50g
	sucrose	750g
	starch syrup(maltose syrup)	400g
	lactose	400g
5	carbon dioxide	34g
	sodium bicarbonate	20g
	orange essence	50g
	food color, Yellow No. 4	5g
	food color, Red No. 3	2.5g

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A carbonated candy-type vitamin preparation is prepared by a similar method to Example 8.

#### Example 10

15	vitamin C	250g
	riboflavin	50g
	pyridoxine.HCl	55g
	vitamin B <sub>1</sub>	250g
	glycine	10g
20	leucine	20g
	tocopherol acetate	50g
	dried yeast containing Se	50g
	retinol acetate	20g
	ergocalciferol	10g
25	KI	10g
	onion extract	50g
	emulsifier lecithin	45g

	citric acid	50g
	sugar	750g
	starch syrup(maltose syrup)	400g
	lactose	400g
5	carbon dioxide	34g
	sodium bicarbonate	20g
	orange essence	50g
	food color, Yellow No. 4	5g
	food color, Red No. 3	2.5g

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A carbonated candy-type vitamin preparation is prepared by a similar method to Example 8.

#### 【Effect of the Invention】

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The present invention concerned with a carbonated candy-type vitamin preparation comprising at least one vitamin selected from the group consisting vitamins, sucrose, starch syrup(maltose syrup), lactose, carbon dioxide, sodium bicarbonate and prepared by a conventional manufacturing process for carbonated candy. The present preparation can have, if necessary, one or more ingredients selected from the group consisting of trace elements or

20 other ingredients necessary for children or weak people. Children eagerly take the preparation and when the preparation is taken in the mouth, the carbonated pharmaceutical vitamin preparation is popped out and the active ingredients are diffused and dissolved in the mouth very quickly and therefore, the effects of the active ingredients showed very quickly.

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